

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. When strikethrough cannot easily be perceived, or when five or fewer characters are deleted, [[double brackets]] are used to show the deletion. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (Previously Presented) An image processing apparatus comprising:
a contour image generator for generating a contour image from an input image generated by reading, as a multi-valued image, print contents of printed matter;
a contour adder for adding contours to said contour image by referring to a contour density distribution in said contour image to generate a contour added image; and
an image synthesizer for superimposing said input image and a smoothed image obtained by performing a smoothing process for said input image, by referring to said contour added image, to generate a synthesized image,
wherein said contour adder comprises:
a determination unit which scans said contour image with a predetermined window, and determines whether a density of contour pixels in said predetermined window is equal to or greater than a threshold value concerning the density;
a calculator which calculates an average value of contour levels of contour pixels in said predetermined window; and
a change unit which changes a contour level of a target pixel in said predetermined window to said average value if the density of the contour pixels in said predetermined window is equal to or greater than said threshold value concerning the density and a contour level of a target pixel in said predetermined window is smaller than said average value.

2. (Previously Presented) The image processing apparatus according to claim 1, wherein said contour image generator includes a deletion unit which deletes a contour pixel within said contour image, said contour pixel satisfying at least one condition wherein a contour level of said contour pixel is equal to or smaller than a predetermined threshold value.

3. (Previously Presented) The image processing apparatus according to claim 2, wherein said predetermined threshold value is a value for a contour level higher than a contour level caused by printing dots that result from printing and moire patterns that occur when the print contents are read.

4. (Cancelled)

5. (Cancelled)

6. (Original) The image processing apparatus according to claim 1, wherein said image synthesizer determines a superimposition ratio for a pixel value of a pixel in said input image and a pixel value of a corresponding pixel in said smoothed image by referring to the contour levels of respective pixels in said contour added image.

7. (Original) The image processing apparatus according to claim 6, wherein said superimposition ratio is determined by substituting said contour levels of said respective pixels in said contour added image into a predetermined function.

8. (Previously Presented) An image processing method, comprising:
generating a contour image from an input image generated by reading, as a multi-valued image, print contents of printed matter;

adding contours to said contour image by referring to a contour density distribution in said contour image and generating a contour added image; and

superimposing said input image and a smoothed image obtained by performing a smoothing process for said input image, by referring to said contour added image, and generating a synthesized image,

wherein said adding comprises

scanning said contour image with a predetermined window, and determining whether a density of contour pixels in said predetermined window is equal to or greater than a threshold value concerning the density;

calculating an average value of contour levels of contour pixels in said predetermined window; and

changing a contour level of a target pixel in said predetermined window to said average value if the density of the contour pixels in said predetermined window is equal to or greater than the threshold value concerning the density and the contour level of the target pixel in said predetermined window is smaller than said average value.

9. (Previously Presented) The image processing method according to claim 8, wherein said generating includes deleting a contour pixel within said contour image, said contour pixel satisfying at least one condition wherein a contour level of said contour pixel is equal to or smaller than a predetermined threshold value.

10. (Previously Presented) The image processing method according to claim 9, wherein said predetermined threshold value is a value for a contour level higher than a contour level caused by printing dots that result from printing and moire patterns that occur when the print contents are read.

11. (Cancelled)

12. (Cancelled)

13. (Previously Presented) The image processing method according to claim 8, wherein said synthesizing comprises determining a superimposition ratio of a pixel value of a pixel in said input image and a pixel value of a corresponding pixel in said smoothed image by referring to the contour levels of respective pixels in said contour added image.

14. (Previously Presented) A computer program product stored on a storage medium and including an image processing program for execution on a computer, said image processing program comprising:

generating a contour image from an input image generated by reading, as a multi-valued image, print contents of printed matter;

adding contours to said contour image by referring to a contour density distribution in said contour image, and generating a contour added image; and

superimposing said input image and a smoothed image obtained by performing a smoothing process for said input image, by referring to said contour added image, and generating a synthesized image,

wherein said adding comprises

scanning said contour image with a predetermined window, and determining whether a density of contour pixels in said predetermined window is equal to or greater than a threshold value concerning the density;

calculating an average value of contour levels of contour pixels in said predetermined window; and

changing a contour level of a target pixel in said predetermined window to said average value if the density of the contour pixels in said predetermined window is equal to or greater than the threshold value concerning the density and the contour level of the target pixel in said predetermined window is smaller than said average value.

15. (Previously Presented) The computer program product according to claim 14, wherein said generating includes deleting a contour pixel within said contour image, said contour pixel satisfying at least one condition wherein a contour level of said contour pixel is equal to or smaller than a predetermined threshold value.

16. (Previously Presented) The computer program product according to claim 15, wherein said predetermined threshold value is a value for a contour level higher than a contour level caused by printing dots that result from printing and moire patterns that occur when the print contents are read.

17. (Cancelled)

18. (Cancelled)

19. (Previously Presented) The computer program product according to claim 14, wherein said synthesizing comprises determining a superimposition ratio for a pixel value of a pixel in said input image and a pixel value of a corresponding pixel in said smoothed image by referring to the contour levels of respective pixels in said contour added image.

20. (Previously Presented) The computer program product according to claim 19, wherein said superimposition ratio is determined by substituting said contour levels of said respective pixels in said contour added image into a predetermined function.